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HIGREEW – Deliverable Report

<< D5.2 – Integration, communication and control testing of HIGREEW battery>>

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Abbreviations

Symbol / Shortname	
A/C	Air Conditioning
AORFB	Aqueous Organic Redox Flow Battery
BoP	Balance of Plant
BMS	Battery Management System
CE	Coulombic efficiency
EE	Energy Efficiency
EMS	Energy Management System
HMI	Human Machine Interface
OCV	Open Circuit Voltage
SOC	State of Charge
SOP	State of Power
TMS	Thermal management system
RTE	Round Trip Efficiency

Publishable summary

The HIGREEW project aims to design, build and demonstrate a prototype based on a new generation aqueous organic redox flow battery (AORFB) with a low-cost water-soluble organic electrolyte, low-cost components and long lifetime. One of the main outcomes of the project would be a fully functional AORFB prototype.

The functionality and performance of the HIGREEW technology has been validated in a real environment. Moreover, the proper function of the BMS and the control system has been also validated. Two main things have been checked during this process; the first one is the communication between the EMS and the battery's BMS and the second one is the functionality of the BMS according to the control algorithm developed in WP4.

Besides that, the performance of the battery has been validated. Polarization curves has been done to get an understanding of the stacks electrochemical performance and get more information for the parametrization of the state of power calculation. Later, constant power cycle tests were performed according to the test protocol defined in WP1. Constant current cycles were added to get an estimation of the battery's long-term stability.

This deliverable summarizes the work done, on the one hand, in the validation of the BMS. Testing safety of the prototype with the alarms, control of auxiliary services of the BoP and the communication between EMS and BMS. On the other hand, testing of the performance of the battery, from the polarization curves to a continuous cycling test.

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5	C-TECH	C-TECH INNOVATION LIMITED
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